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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>C11D 1/62, 3/37</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 97/05220</b> <b>(43) International Publication Date:</b> 13 February 1997 (13.02.97)
<b>(21) International Application Number:</b> PCT/GB96/01769 <b>(22) International Filing Date:</b> 23 July 1996 (23.07.96) <b>(30) Priority Data:</b> 9515805.1                      2 August 1995 (02.08.95)                      GB <b>(71) Applicant (for all designated States except US):</b> JEYES GROUP PLC [GB/GB]; Brunel Way, Thetford, Norfolk IP24 1HF (GB). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> MARSHALL, John [GB/GB]; 27 Wentworth Green, Sunningdale, Norwich NR4 6AE (GB). COOPER, Nigel [GB/GB]; 25 Heywood Road, Diss, Norfolk IP22 3DJ (GB). <b>(74) Agent:</b> RUFFLES, Graham, Keith; Marks & Clerk, 57-60 Lincoln's Inn Fields, London WC2A 3LS (GB).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
<b>(54) Title:</b> COMPOSITIONS  <b>(57) Abstract</b>  A concentrate which upon dilution with water gives a relatively viscous end solution, which concentrate comprises water, a quaternary ammonium compound and a compatible cationic acrylic polymer.		

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### COMPOSITIONS

This invention is concerned with improvements in and relating to concentrates containing quaternary ammonium compounds and intended for eventual application to a substrate to clean it, disinfect it, condition it or otherwise treat it.

It is often desirable that a composition to be applied to a substrate be relatively viscous in that this enables the composition to remain longer in contact with the substrate and also gives an impression of "strength". Thus, for example the disinfection of substrates with aqueous solutions of quaternary ammonium compounds is well established and relatively viscous solutions, e.g. having a viscosity of 100 to 500 cps at 25°C, are useful for this purpose. Similarly the conditioning of fabrics by application thereto of aqueous solutions of a wide variety of quaternary ammonium compounds is well established. It is desirable that the composition be relatively viscous as compared with water, e.g. have a viscosity in the range of 100 - 500 centipoise, especially 150 - 400 centipoise at 25°C.

US 4 752 298 discloses a shampoo system with up to 10% total detergent actives having a thickening system based on a cationic surfactant and an amphoteric polymer.

The present invention provides a pourable concentrate which upon dilution with water gives a relatively viscous end solution, which concentrate comprises water, a quaternary ammonium compound, and a compatible cationic acrylic polymer.

Suitable quaternary ammonium compounds for use in the compositions of the concentrates of the invention include disinfectant quaternary ammonium compounds such as tetraalkyl ammonium salts (such as chlorides, sulphates etc.) in which at least one of the alkyl groups is a long chain alkyl group, e.g. containing at least 12 carbon atoms. Another especially useful class of quaternary ammonium compounds, which

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have fabric softening properties are the so-called ester quaternary compounds, that is quaternary ammonium compounds in which one of the substituents upon the nitrogen atom comprises an ester group, R-CO-O- in which R is typically an alkyl group. The remainder of the substituents upon the nitrogen atom include at least one alkyl group, preferably a long chain alkyl group, and hydrogen atoms or lower alkyl groups such as methyl or ethyl groups. Particular examples of such ester quaternary compounds are those sold under the Trade Names "Stepantex" by Stepan S.A.

Other quaternary compounds which may be employed include compounds capable of forming intramolecular quaternary ammonium species, i.e. amphoteric surface active agents such as fatty acid amino-alkyl betaines.

The concentration of the quaternary ammonium compound in the concentrate of the invention will depend upon two factors, namely the desired concentration in the final application solution and the intended degree of dilution. In this latter regard, concentrates in accordance with the invention are typically intended for dilution with from 6 to 1 times their volume of water, preferably 4 to 2 times their volume of water, especially about 3 times their volume of water. The concentration of quaternary ammonium compound in the final treatment solution will typically be from 0.5 to 8% (e.g. 2 to 8% ) by weight, preferably 3 to 6% by weight. As a result, useful concentrations of quaternary ammonium compound in the concentrate are from 5 to 35% by weight, preferably 7.5 to 25% by weight, more especially about 10-20% by weight.

In certain cases, for example when using the ester quaternary compounds noted above, concentrates containing relatively high levels of quaternary ammonium compound, e.g. 10% or greater, tend to have overly high viscosities for ready pouring and, in this case, the concentrate may contain a hydrotrope/viscosity modifier which is an alkali metal or ammonium salt of a lower alkyl benzene sulphonate such as sodium xylene sulphonate, sodium cumene sulphonate or sodium toluene sulphonate. This hydrotrope is suitably present in relatively small amounts, e.g. from 0.1 to 1% by weight, preferably 2 to 7%

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by weight. Additionally, a solvent may be present, e.g. isopropanol or propylene glycol, as viscosity modifier, e.g. in an amount of up to 15% by weight, preferably 0.5 to 5% by weight.

The cationic acrylic polymer is suitably an acrylamide/quaternary ammonium acrylate copolymer such as that sold under the Trade Name "Salcare" by Allied Colloids. This polymer (as supplied) is suitably present in the composition in an amount of from 0.1 to 5% by weight, preferably 0.1 to 1.5% by weight.

In addition to the above ingredients, concentrates in accordance with the invention may, and often do, contain other ingredients such as perfumes and colourants. Perfumes, when present, are suitably present in amounts of from 0.1 to 2% by weight, preferably 0.5 to 1% by weight.

In accordance with a further embodiment of the invention, the concentrate can be put up in a sealed container containing a unit dose of the concentrate.

In order that the invention may be well understood the following Example is given by way of illustration only.

**EXAMPLE 1**

**Fabric Conditioner (Concentrate)**

<u>Ingredient</u>	<u>% w/w</u>
Esterquat (fabric conditioner)	15
Salcare 92 (acrylic thickener)	0.2
Sodium xylene sulphonate (30%) (hydrotrope)	5
Isopropanol (hydrotrope)	1.6
Perfume and dye	
Water to	100

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Viscosity as = 424 cps

Viscosity of a 1+3 dilution = 295 cps

In the light of this disclosure, modifications of the described example, as well as other examples, will now become apparent to persons skilled in the art.

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**CLAIMS:**

1. A concentrate which upon dilution with water gives a relatively viscous end solution, which concentrate comprises water, a quaternary ammonium compound and a compatible cationic acrylic polymer.
2. A concentrate according to claim 1, comprising from 10% to 20% by weight of the quaternary ammonium compound.
3. A concentrate according to any preceding claim, wherein the amount of the cationic acrylic polymer is from 0.1% to 5% by weight of the concentrate.
4. A concentrate according to any preceding claim, further comprising a hydrotrope.
5. A concentrate according to any preceding claim, wherein the amount of the hydrotrope is from 0.1% to 10% by weight of the concentrate.
6. A sealed container comprising a unit dose of a concentrate according to any preceding claim.

## INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 C11D1/62 C11D3/37

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP,A,0 458 599 (UNILEVER PLC. ) 27 November 1991 see page 7, line 17 - page 16, line 51 ---	1-5
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
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